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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/759,151

Filing Date: January 16, 2001

Appellant(s): LAM ET AL.

Andrew J. Bateman
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on September 19, 2005 appealing from the Office action mailed on April 20, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

The present application contains claims 1-11, 15-25, 31-41, 46-56, 60-70, 76-86, 91-101, 106-116, 121-131, 135-145, 151-161, 212-222, and 249-378, all of which are currently pending. Claims 12-14, 26-30, 42-45, 57-59, 71-75, 87-90, 102-105, 117-120, 132-134, 146-150, 162-211, and 223-248 have been canceled. Claims 1-11, 15-25, 31-41, 46-56, 60-70, 76-86, 91-101, 106-116, 121-131, 135-145, 151-161, 212-222, and 249-378 should be the bases for this Appeal.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

However, there is a typo in the previous Office Action, wherein every claim 103(a) Rejection should have listed the prior art Sharma as a part of every 103(a) Rejection as inherited from the 103(a) Rejection over the associated parent claims.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 6,636,906	Sharma et al.	04-2000
US 5,274,772	Dunn et al.	11-1992
US 6,009,549	Bliss et al.	05-1997

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 15, 31, 46, 60, 76, 91, 106, 121, 135, 151, 212, and 2, 6, 16, 20, 32, 36, 47, 51, 61, 65, 77, 81, 92, 96, 107, 111, 122, 126, 136, 140, 152, 156, 213, 217, and 9, 23, 39, 54, 68, 84, 99, 114, 129, 143, 159, 220, and 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the admitted prior art and Sharma.

Referring to claims 1, 15, 31, 46, 60, 76, 91, 106, 121, 135, 151, and 212: The prior art discloses a serial control data circuit (figure 1, structure 12) and data circuit (figure 1, structure 14). The prior art does not explicitly disclose the control data signal including information regarding split or non-split. Sharma discloses a method of solving the latency problem in I/O operations caused by each device (column 1, lines 36-37). Sharma teaches one to obtain the data value at the time the request was made and to make forward progress without incurring delay attributable to obtaining the updated value (column 2, lines 15-21), and Sharma teaches an embodiment with splitting transactions (Column 3, lines 51-53). Sharma discloses that it is known to indicate whether the transaction is split or non-split (column 6, lines 35-37). Sharma's means to control the split transaction activities is equivalent to the claimed serial control data signal. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the Sharma's teaching onto the prior art because

Sharma teaches one how to accommodate the latency in I/O operation with either split or non-split capability.

Referring to claims 2, 6, 16, 20, 32, 36, 47, 51, 61, 65, 77, 81, 92, 96, 107, 111, 122, 126, 136, 140, 152, 156, 213, and 217: Since the split transaction splits transaction into several sessions, the first session is the first split, the last session is the last split, and any sessions in between are the continue splits. Sharma discloses the indication for the split mode (Remark, page 65, 3rd paragraph, last 2 lines), the number of requesting bits (Remark, page 65, last paragraph), and unique transaction identifier (column 5, lines 48-50, column 6, lines 20-22). Since Sharma discloses the indication for the split mode, the total number of transmitting bits, and the unique transaction ID, each data receiver/requestor can determine whether the received data is a first split, continue split, or last split.

Referring to claims 9, 23, 39, 54, 68, 84, 99, 114, 129, 143, 159, 220, 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, and 366: The prior art discloses the first hardware component is a disk controller and the second hardware component is an I/O channel. Sharma also discloses the hard disk (column 1, lines 20-22).

4. Claims 3-5, 17-19, 33-35, 48, 50, 62, 64, 78, 80, 93, 95, 108, 110, 123, 125, 137, 139, 153, 155, 214, 216 and 8, 22, 38, 53, 67, 83, 98, 113, 128, 142, 158, 219, and 249, 250, 255, 256, 261, 262, 267, 268, 273, 274, 279, 280, 285, 286, 291, 292, 297, 298, 303, 304, 309, 310, 315, 316, 321, 322, 327, 328, 333, 334, 339, 340, 345, 346, 351, 352, 357, 358, 363, 364, 369, 371, 373, 375 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the admitted prior art, Sharma, and Dunn.

Referring to claims 3-5, 17-19, 33-35, 48, 50, 62, 64, 78, 80, 93, 95, 108, 110, 123, 125, 137, 139, 153, 155, 214, 216, 249, 250, 255, 256, 261, 262, 267, 268, 273, 274, 279, 280, 285, 286, 291, 292, 297, 298, 303, 304, 309, 310, 315, 316, 321, 322, 327, 328, 333, 334, 339, 340, 345, 346, 351, 352, 357, 358, 363, 364, 369, 371, 373, 375: The prior art and Sharma do not explicitly disclose specifying the amount of the data or codeword in each session as a common practice in constructing data packets. Dunn discloses a record format practice to accommodate different record length. Dunn discloses a data format with fields of PCT CNT and CNT (figure 2). The PCT CNT indicates the number of packets in the block, and CNT indicates the summation of the original length of the supplied records (column 4, lines 4-6). The PCT CNT is equivalent to the claimed code word size of the current sector. Dunn teaches one to optimize the bandwidth usage efficiency by controlling data amount in each session. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt Sharma and Dunn's teachings onto the prior art because Sharma teaches one how to accommodate the latency in I/O operation with either split or non-split capability and Dunn enables one to improve the transmission efficiency by controlling the data amount in each session.

Referring to claims 8, 22, 38, 53, 67, 83, 98, 113, 128, 142, 158, and 219: The prior art does not explicitly claim a ready signal. Dunn discloses a status store for storing/monitoring status for the data processing operations (column 15, lines 40-46). Thus, Dunn discloses the ready status/signal when the operation related contingency met.

5. Claims 7, 21, 37, 52, 66, 82, 97, 112, 127, 141, 157, 218 and 10, 24, 40, 55, 69, 85, 100, 115, 130, 144, 160, 221, and 11, 25, 41, 56, 70, 86, 101, 116, 131, 145, 161, 222, and 215, 253, 254, 257, 259, 260, 263, 265, 266, 269, 271, 272, 275, 277, 278, 281, 283, 284, 287, 289, 290, 293, 295, 296, 299, 301, 302, 305, 307, 308, 311, 313, 314, 317, 319, 320, 323, 325, 326, 329, 331, 332, 335, 337, 338, 341, 343, 344, 347, 349, 350, 353, 355, 356, 359, 361, 362, 365, 367, 368, 370, 372, 374, 376 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the admitted prior art, Sharma, Dunn, and Bliss.

Referring to claims 7, 21, 37, 52, 66, 82, 97, 112, 127, 141, 157, 218, 215, 253, 254, 257, 259, 260, 263, 265, 266, 269, 271, 272, 275, 277, 278, 281, 283, 284, 287, 289, 290, 293, 295, 296, 299, 301, 302, 305, 307, 308, 311, 313, 314, 317, 319, 320, 323, 325, 326, 329, 331, 332, 335, 337, 338, 341, 343, 344, 347, 349, 350, 353, 355, 356, 359, 361, 362, 365, 367, 368, 370, 372, 374, and 376: The admitted prior art and Sharma do not explicitly disclose the padding data and sync mark. Dunn discloses that the padding data is a known practice to align packet fields (column 4, lines 44-46), so each packet is in a proper predetermined format. Bliss discloses the sync mark is a practice for synchronizing data stream (figure 1B). Bliss teaches one to use the sync mark for identifying a predetermined format in order to read a data packet correctly. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the teachings of Sharma, Dunn, and Bliss onto the prior art because Sharma teaches one how to accommodate the latency in I/O operation with either split or non-split capability, Dunn enables one to improve the transmission accuracy by controlling the packet format in each session, and Bliss teaches one to synchronize the data stream with the sync mark.

Referring to claims 10, 24, 40, 55, 69, 85, 100, 115, 130, 144, 160, and 221: Bliss discloses a sync transceiver (figure 4, structure 44) for receiving sync mark.

Referring to claims 11, 25, 41, 56, 70, 86, 101, 116, 131, 145, 161, and 222: Bliss discloses a sync mark in front of the data (figure 1B). Bliss teaches placing the sync mark at the front of a given field for indicating the beginning of the field.

(10) Response to Argument

1. In response to Applicant's argument that Sharma merely discloses storing non-split data, does not disclose split or non-split data (pages 16-18, Section 3 of the Brief): As Applicant admitted, Sharma does disclose the non-split data (Brief, page 17, 3rd paragraph, line 4). Applicant also has admitted that Sharma discloses the indication for the split mode (Brief, page 22, last line, page 23, 1st paragraph, Remark, dated 1/19/2005, page 65, 3rd paragraph, last 2 lines). Sharma discloses cache line to support I/O transaction with latency (Sharma, column 5, 3rd paragraph); Sharma discloses identifying a split transaction and non-split transaction (Sharma, column 5, lines 48-50, column 6, lines 35-37). Since Sharma discloses identifying split, Sharma discloses identifying the non-split when a split is not identified. Hence, Sharma's means to identify the split data and non-split data is equivalent to the claimed serial control data signal determining whether the data is split or non-split. Regarding the argument that Sharma only discloses storing information as to non-split-read data, and Sharma provides no signal that contains information as to whether the data is one of split or non-split (Brief, page 17, 3rd paragraph, last 4 lines); Applicant has admitted that Sharma discloses a status line including a split-read state that means split read mode (Brief, page 22, last line, page 23, 1st paragraph). The

information for indicating whether it is a split state is the information for indicating whether the data is split or not non-split.

2. In response to Applicant's argument on lack of motivation and non-analogous art (Brief, pages 18-20, Section 4, page 28, Section 3, page 30, Section 1): Sharma is an analogous art. The admitted prior art is an interface for I/O communication with a peripheral device, and Sharma directs to an invention of improved I/O operations (Sharma, column 1, lines 13-15 and 36-37); thus, the arts are related. Sharma discloses the needs for improving the performance by the latency time (Sharma, column 1, lines 37-67, column 2, lines 1-12), which is the motivation.
3. In response to Applicant's argument that the prior arts on record show no first split, continue split, and the last split (Brief, page 23, 2nd paragraph): Sharma discloses that a spit transaction is a contiguous-block of data that can span one or more cache lines (Sharma, Column 3, lines 53-54). The first split is the first block of the continuous-block in a split transaction, the continue split is the block following the first spit, and the last split is the last block of the continuous-block in the split transaction.
4. In response to Applicant's argument that the first split, continue split, and last split are based on "probabilities or possibilities" (Brief, page 24, 2nd paragraph): The split transaction is a well-known protocol; and as explicitly disclosed by Sharma, a split read transaction is a contiguous-block of data (Sharma, column 3, lines 52-54). Hence, it is not a probability or

possibility, “splitting” is a well-known solid practice in a split transaction by a person with ordinary skill in the computer art.

5. In response to Applicant’s argument that PTO made no attempt to show where Sharma disclose or suggests the claimed feature of a serial control data signal indicating whether a succeeding serial control data is a continuation of a current serial control data (Brief, page 27, last paragraph): As stated above, Sharma explicitly discloses that a spit transaction is a contiguous-block of data that can span one or more cache lines (Sharma, Column 3, lines 53-54). Both the paragraph 10 of the previous Office Action dated 4/20/05 and the Applicant’s Remark dated 1/19/2005 have provided that Sharma discloses the indication for the split mode, the number of requesting bits, and an unique transaction identifier. Sharma’s indication for the split mode, the number of requesting bits, and an unique transaction identifier is the claimed feature of a serial control data signal indicating whether a succeeding serial control data is a continuation of a current serial control data.

6. In response to Applicant’s argument that the admitted prior arts and Dunn do not disclose the amount of data to be written during a write operation (Brief, page 33, last paragraph): Neither the admitted prior art nor Sharma disclose an indication for the number of data to be written. Although Sharma does not disclose an indication for the number of data to be written, Sharma discloses an indication for the number of data to be read (Sharma, column 6, lines 25-27). Sharma discloses that it is known to specify the amount of transacting data. Dunn discloses a

digital data writing process. Dunn discloses a length-counting field for indicating the length of the data to be written (Dunn, figure 2, structure 36).

7. In response to Applicant's argument that there is no motivation to combine the Dunn's teaching (Brief, page 34, Section 4, page 38, Section 3, page 42, Section 3) and Dunn does not disclose the codeword size (Brief, page 37, section 2): Dune provides the motivation of increasing the utilization of the system resources for combining several short records into one block (Dunn, column 2, lines 37-41); Dune's record is equivalent to the claimed sector.

8. In response to Applicant's argument that the Dunn does not disclose a ready transceiver transmitting or receiving a bi-directional ready signal (Brief, page 41): Applicant recognizes that Dunn discloses a plurality of registers for storing the signals (Brief, page 41, 2nd paragraph), but Applicant argues that Dunn fails disclosing the claimed transceiver transmitting or receiving the signals stored in the registers. Dunn discloses a status store for storing/monitoring bi-directional status for the data processing operations (Dunn, column 15, lines 40-46, figure 8, structure 300). Dunn discloses that the status information reflects the selection status of the device, the busy status, contingent connections, and all other status necessary for operation the system. Thus, Dunn's busy status and contingent connection and all other status necessary for operating the system are equivalent to the claimed the ready status/signal. Since the prior art discloses the registers for receiving and storing for the signals, the disclosed registers cannot be functional or meaningful if the prior art's embodiment fails providing the means for transmitting or retrieving

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signals stored in the registers. Such means (Dunn, figure 8, structure 233) is the claimed transceiver.

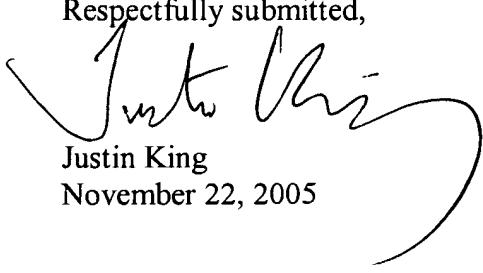
9. In response to Applicant's argument that Bliss does not disclose starting the sync mark, starting writing padding data, and detect a sync mark during read operation (Brief, page 46, 1st and 2nd paragraphs): As disclosed in the Bliss, the purposes of the sync mark and padding data are to align the packet to a pre-determined format (Bliss, column 2, lines 41-44). Therefore, the sync mark and padding data must be written into the packet to accomplish the goal, and the sync mark must be read during the read operation to locate the proper starting position for reading the pre-determined formatted packet.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Justin King
November 22, 2005

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